International Journal of Agricultural Science and Research (IJASR)
ISSN(P): 2250-0057; ISSN(E): 2321-0087
Vol. 9, Issue 5, Oct 2019, 15–22
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TRANS STELLAR
•Journal Publications •Research Consultancy

AN ECONOMIC ANALYSIS OF INDIAN PULSES SECTOR - A CASE STUDY OF RED GRAM

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ABSTRACT

India ranks first in world's pulses production and consumption. Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, Andhra Pradesh and Karnataka are major producers of pulses which accounted for 80 per cent of total production in the country. The National Food Security Mission was implemented to increase the production of pulses by 2 Mt annually. Policy Analysis Matrix was formulated to find the social and private profitability and export competitiveness of pulses in India during the triennium ending 2015-16. The results showed that the domestic wholesale price of red gram was higher than the international market price. Export of red gram was discouraged under the policy circumstances. DRC value indicates that the domestic resources are effectively utilized by the farmers.

KEYWORDS: Policy Analysis Matrix & Comparative Advantage

Received: Apr 13, 2019; **Accepted:** May 03, 2019; **Published:** Oct 04, 2019; **Paper Id.:** IJASROCT20193

Original Article

INTRODUCTION

India ranks first in world's pulses production and consumption. Pulses consist of 20-25 per cent protein which is twice the protein present in wheat and thrice that is present in rice. In addition, it has low carbon and water footprints which make them an integral part of the sustainable farming system. Pulses accounts to about 9-10 per cent to total food grain production and main source of plant-based proteins, vitamins and minerals. The role of the government is to ensure availability of adequate quantity of food to each individual at affordable prices, as per the Food Security Act -2013.

Due to the increasing nutrition-conscious of population in the country, there exists the demand –supply gap. India produces one-fourth of the global pulses production and the domestic consumption is almost one-third, importing 2–6 mt from Myanmar and Australia. Pulses production in India during the year 2015-16 was 16.35 mt. The net demand was 21.89 mt. To meet the domestic demand India imported 5.79 mt of pulses from Australia, Canada and Myanmar.

India, Canada, Myanmar, China, USA, Brazil, Australia and Ethiopia are the major producer pulses in the world. The world acreage under pulses during the year 2017-18 is 85.40 million hectare with the production of 87.40 mt and the productivity of 1023 kg per hectare. Chickpea is the most cultivated pulse crop with 48 per cent production followed by pigeon pea at 15 to 20 per cent production and black gram and green gram at 8-10 per cent.

The National Food Security Mission (NFSM- Pulses) was started in the year, 2007. The main aim of the scheme is to increase the production of pulses by 2 mt annually at the end of the Eleventh Plan (2011-12). The mission achieved the additional production of pulses at the end of Eleventh plan. The Mission continued to the Twelth Five Year Plan with additional production of 4 mt of pulses.

Among the pulses, chickpea recorded the highest production level of 11.23 mt. Red gram remained at the second position in total pulses production with the production of 4.25 mt followed by black gram and green gram with the production level of 3.56 mt and 2.01 mt respectively. The total acreage under red gram during the year 2017-18 is 4.4 million hectare with the production of 4.2 mt. The productivity of red gram is 960kg/ha. Maharashtra is the largest red gram producing state in the country. The major red gram producing states in India are Maharashtra, Madhya Pradesh, Karnataka, Gujarat and Uttar Pradesh. The objective of the study is to measure the private and social profitability of red gram and to measure the export competitiveness of red gram in the world market using the PAM approach.

REVIEW OF LITERATURE

Reddy (2008) examined the Pulses Production Technology in India. The study analyzed the pulses production technology and the constraints in pulses production. It emphasized the expansion of area under short duration varieties, development of multiple disease and pest resistance varieties, use of micro-nutrients and increase in area under Rabi pulses. He suggested that the Minimum Support Price announced by the government was not effective for pulses which imply that the existing market prices would be considered, when fixing the MSP for pulses to reduce the demand-supply gap.

The study examines the causes of low growth in pulses production in India. It considered the effectiveness of policy implications in helping farmers gain higher income to improve production technology and productivity. The analysis showed that the agricultural policy implication on prices, which aims to provide a remunerative and stable price environment to farmers, was largely irrelevant for pulses. It also suggested that ther should be some criteria for fixing the minimum support price and making it sensitive to the prevailing market prices. Tripathi (2016)

Makama (2016) revealed the export competitiveness of rice in India through the PAM approach. Results of the study depicted that the revenues at social prices were much higher than of revenue at private prices. Since, rice grown in our country was net-taxed, the average NPC was 0.48 thus indicating that Rice producers in country was not protected and also the average EPC was found to be 0.44 indicating a high export competitiveness of Indian rice. DRC was found to be less than unity (0.37), which indicates that the domestic resources were efficiently utilized in crop production and also implies the comparative advantage of rice production.

According to the study of Bindukumar (2006), the changes in pulses economy in Karnataka, red gram exports was negligible during pre WTO period. The co-integration analysis showed integration between the domestic and the world prices. The red gram was perfectly competitive and had comparative advantage in crop production. The study suggested that the state government should devise incentive policies in enhancing the exports of red gram for sustainable trade in the international market.

DATA SOURCE AND METHODOLOGY

Data Source

Secondary data was collected on area, production and productivity of red gram in India during the TE 2015-16. Monthly wholesale price, cost of production as well as policy implications on red gram by the government was collected from different sources viz., Agmarknet, Indiastat, Directorate of Economics and Statistics (DES), Department of Commerce, Ministry of Agriculture, GOI, APEDA, AgriExchange. Data on Free on Board prices and Cost Insurance and Freight charges was compiled from Directorate of Pulses Development, FAO stat, Journals and relevant articles for further references.

Methodology

Policy Analysis Matrix (PAM)

PAM is used to measure the trade competitiveness of agricultural commodities in the world market. This framework was first developed by Monke and Pearson (1989). PAM is a tool to examine the effect of policy implications by constructing two enterprise budgets, one should be valued at market prices and the other was valued at social prices. Policy Analysis Matrix is constructed for red gram during the TE 2015-16.

Inputs and outputs used in the Policy Analysis Matrix were classified into tradable and non-tradable items and were measured at two types of prices i. e. private price and social price. Tradable inputs include internationally traded inputs. Tradable inputs includes seeds, manures and fertilizers. Domestic factors that are not internationally traded are called non-tradable inputs.. Non-tradable inputs include land, labour and capital were measured at private and social prices. Private prices, in which goods were exchanged and are used in the budgets like the price of crop, the cost of seeds, fertilizers, pesticides and the wage rate. Social prices are those, which prevail in the absence of market failures or policy distortions. Social value reflects the value to society as a whole rather than the value to private individuals. It is also called as opportunity cost.

Table 1: Framework of Policy Analysis Matrix

Description	Value of Outputs	Value of Inputs		Profits
		Tradable	Non-Tradable	
Private prices	A	B	C	D = A - (B+C)
Social Prices	E	F	G	H= E- (F+G)
Policy Transfers	I = A-E	J = B-F	K = C-G	L= D-H

The indicators in the first row provide the measures of private profitability (D). It is defined as the difference between revenue (A) at private price and costs of tradable and non-tradable inputs (B+C). Private profitability explains the export competitiveness of the agricultural system, given the existing technologies, input and output prices and the policy implications. The second row of the PAM matrix explains the social profitability (H) of the agricultural system. It is defined as the difference of revenue at a social price (E) and social cost of tradable and non-tradable inputs (F+G). It measures the comparative advantage of the agricultural system.

Measures of Competitiveness

Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost (DRC) and Effective Rate of Protection (ERP) are the indicators of export competitiveness of agricultural commodities. These indicators are calculated under importable hypothesis, since India imports red gram rather than exports. Under importable hypothesis, the competition is taking place at domestic port. The relevant border price to be compared to the farm gate price at out port plus the transport cost to the domestic market, port charges, handling cost etc. Measures of competitiveness (NPC, EPC, DRC and ERP) are calculated for the major pulses over the years 2012-13 to 2015-16.

Nominal Protection Coefficient (NPC)

It refers to the ratio of domestic wholesale price to the international market price. It explains the variation of the private and social price of output. NPC is expressed as:

NPC = A/E

where,

A - Private price of output.

E - Social price of output.

NPC higher than unity, the domestic wholesale price is higher than the international market price. NPC value greater than one, discourages the export of the commodity. NPC less than one encourage the export of the commodity.

Effective Protection Coefficient (EPC)

EPC defined as the ratio of difference between the private price of output and tradable input (A-B) to the difference between the social price of output and tradable input (E-F). EPC can be calculated as:

EPC = (A-B)/(E-F)

where,

A-B is the difference between the private prices of output and value of tradable input.

E-F is the difference between the social price of output and value of tradable input.

EPC greater than one, Positive incentive effect (subsidy to the producers), EPC less than one, Negative incentive effect.(tax on producers).

Domestic Resource Cost (DRC)

DRC is used to examine the comparative advantage (or) economic efficiency of agricultural commodities. Domestic resource cost coefficient will be calculated as,

DRC = G/(E - F)

where,

G - Social price non-tradable input at.

E-F - difference between the social price of output and tradable input.

DRCs greater than one, the resources are not effectively utilized in the production of the commodity. DRC less than one shows the effective utilization of resources in the production of the commodity, the country had comparative advantage in production of particular commodity.

Effective Rate of Protection (ERP)

To measure the structures of protection like tariffs, import bans, quantitative restrictions on Indian pulses. ERP can be estimated as,

ERP = EPC – 1

Higher the value of ERP, the commodity will be highly protected for doing trade in the international market. Lower value of ERP, implies that the lesser protection for the commodity to be traded.

RESULTS AND DISCUSSIONS

Policy Analysis Matrix for Red gram

PAM was constructed for red gram during the TE 2015-16. The private profitability of red gram was found to be Rs.2907 and the social profitability of red gram was Rs.2381. The net policy transfer was found to be Rs.526. The result of the Policy Analysis Matrix was shown in Table2.

Table 2: Policy Analysis Matrix of Red gram during the TE 2015-16

Description	Value of Outputs	Value of Inputs		Profits
		Tradable	Non-Tradable	
Private prices (Rs/Q)	6316	450	2959	2907
Social Prices (Rs/Q)	4845	819	1645	2381
Policy Transfers (Rs/Q)	1471	-369	1314	526

[1]The difference between the private and social price of tradable input was Rs.-369. Without government subsidies the farmers are actually paying Rs.819 and the farmers are paying Rs.450 with availing the government subsidies. The government was paying a sum of Rs.369 through various policy implications such as subsidies. The profit at social prices (Rs.2381) was lower than the profit at private prices (Rs.2907). The net profit transfer was positive (Rs.526) which indicates that the farmers were benefited under the existing policy environment.

Measures of Competitiveness

NPC, EPC, DRC and ERP are the indicators of export competitiveness of commodities. These indicators are calculated for red gram during the year 2013-14 to 2015-16 and are best shown in table given below;

Table 3: Measures of Competitiveness of Red Gram

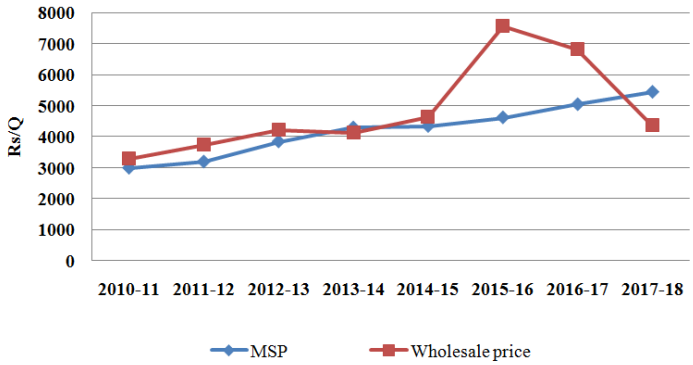
Year	NPC	EPC	DRC	ERP
2013-14	0.75	0.77	0.22	0.23
2014-15	1.07	1.20	0.41	0.20
2015-16	2.02	3.02	0.74	2.02
Average	**1.28**	**1.66**	**0.46**	**0.82**

NPC value greater than one which implies that the domestic wholesale price of red gram is greater than the international market price. Export of red gram is discouraged under the policy circumstances. The DRC value less than one indicates that domestic resources are effectively utilized by the farmers. India had comparative advantage in red gram production in the country. EPC value is also greater than one which implies that the farmers are benefited under the existing policy circumstances.

Under zero-tariff, red gram is imported at a rate of Rs.4845/Q. If the import tariff of red gram is increased by 10 per cent and 15 per cent red gram will be imported at a rate of Rs.5330 and Rs.5572/Q respectively which are much lower than the private price of red gram. Therefore, it is better to increase the imports of red gram rather than increasing the domestic production. The domestic producers are safeguarded by enhanced MSP by the government over the years.

[1] Note: Maharashtra is the majorred gram producing state in India.. Cost of production of red gram in Maharashtra is taken for analysis (B and C). Source: Indiastat. Monthly wholesale price (A) of red gram is collected from Gulberga market, which is major red gram market in Madhya Pradesh. Source: Agmarknet. Major import source of red gram is Myanmar. Social price of output (E) collected from Department of Commerce, Ministry of Commerce and Industry, GOI. Subsidies under NFSM are obtained from Annual publications of Directorate of Pulses Development (F and G).

Trends in Minimum Support Price and Wholesale price of Red gram:



Source: Indiastat.

Figure 1

The domestic wholesale price of red gram was much higher than the Minimum Support price during the years 2015-16 and 2016-17. During the year 2017-18, the MSP was higher than the domestic wholesale price due to import of red gram from Myanmar.

CONCLUSIONS

India is having a comparative advantage in production of red gram in the country. Analysis shows that the Private profitability of red gram is higher than the social profitability implies that the farmers are benefitted under the existing policy circumstances. The domestic wholesale price of red gram is higher than the international market price which discourages the export of red gram to the international market. Farmers are benefited from the domestic wholesale price of red gram prevailing in the country. DRC value less than one implies the comparative advantage of red gram in the country over the years.

Policy implications should be done in extensive research in developing high yielding varieties and improved production technology and betterment in Transfer of technology should be adopted to increase the domestic production and productivity in the major red gram producing states in the country. High yielding varieties of red gram suited to dry farming are to be evolved and should be made available to the farmers. Proper guidance should be provided to the pulse growers about the use of recommended practices and production techniques. The Minimum Support Price announced by the government was not effective for pulses which implies that the existing market prices would be considered, when fixing the MSP for pulses to reduce the demand-supply gap.

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